

In the Claims:

1. An acoustically enhanced liner for selectively insulating a portion of a vehicle from ambient sound energy, comprising:

a base portion fabricated of a composite material comprised of a plurality of mineral fibers and a plurality of organic fibers, said base portion having at least one lofted region for substantially absorbing a portion of the ambient sound energy and at least one compacted region.

2. The liner according to claim 1, wherein the mineral fibers are glass fibers and the organic fibers are formed from a material selected from the group consisting of polypropylene, polyphenylene sulfide, and polyethylene terephthalate.

3. The liner according to claim 1, wherein the base portion is contoured for use as a headliner in a passenger compartment in a vehicle.

4. The liner according to claim 3, wherein the base portion further includes an integral lofted perimeter region that is capable of absorbing a portion of impact energy created during a collision.

5. The liner according to claim 3, further comprising a separate component coupled to at least a portion of a perimeter region of the base portion that is capable of absorbing a portion of impact energy created during a collision.

6. The liner according to claim 5, wherein the separate component is attached to the base portion using an adhesive.

7. The liner according to claim 6, wherein the separate component is fabricated of a composite material comprised of a mixture of mineral fibers and organic fibers.

8. The liner according to claim 1, wherein the base portion is contoured for use as a headliner in a passenger compartment in a vehicle and said at least one lofted region is positioned overlying a driver's seat when installed in the vehicle.

9. The liner according to claim 1, further comprising a fabric layer secured to said base portion.

10. The liner according to claim 9, further comprising a foam layer positioned between said base portion and said fabric layer.

11. The liner according to claim 1, further including at least one angled region, whereby ambient sound energy is reflected from the angled region in a particular direction.

12. The liner according to claim 1, wherein said composite material comprises a co-fiberized composite material.

13. An acoustically enhanced liner for selectively insulating a portion of a vehicle from ambient sound energy, comprising:

a base portion fabricated of a composite material comprised of a plurality of mineral fibers and a plurality of organic fibers, said base portion having at least one first region comprising mineral and organic fibers, at least a

portion of the mineral and organic fibers having a first diameter for absorbing a portion of ambient sound energy and at least one second region comprising mineral and organic fibers, at least a portion of the mineral and organic fibers in the second region having a second diameter which is greater than the first diameter.

14. The liner according to claim 13, wherein the base portion further includes a third region having mineral and organic fibers, at least a portion of the fibers in the third region being of a third diameter.

15. A method of manufacturing a liner comprised of a base portion of a composite material including mineral fibers and organic fibers for use in a vehicle, comprising:

providing mineral and organic fibers in a first selected region of the base portion, wherein at least a portion of the fibers in the first region have a first diameter;

providing mineral and organic fibers in a second region of the base portion, wherein at least a portion of the fibers in the second region have a second diameter which is different from the first diameter;

wherein the locations of the fibers having the first and second diameters are selected to provide a desired degree of acoustical enhancement to the base portion.

16. The method according to claim 15, wherein the first diameter of the mineral and organic fibers in the first region is selected so as to result in the first region absorbing a significant portion of ambient sound energy.

17. The method according to claim 15, wherein the second diameter

is greater than the first diameter.

18. The method according to claim 17, wherein the first and second regions are provided in a single layer.

19. The method according to claim 17, wherein the first region is provided in a first layer and the second region is provided in a separate, second layer.

20. The method according to claim 15, wherein the substrate is contoured during manufacturing for use as a headliner in the passenger compartment of an automobile, and further including the step of attaching a separate component to the perimeter of the base portion to absorb at least a portion of impact energy during a collision.

21. A method of manufacturing a liner for use in a vehicle, comprising:

providing a composite material substrate including a mixture of mineral fibers and organic fibers; and

forming the composite material substrate into a base portion having one or more compacted first regions and one or more lofted second regions, said lofted regions absorbing a greater amount of sound energy than said compacted regions.

22. The method according to claim 21, wherein the forming step includes placing the substrate between a pair of opposing dies that together form a contour corresponding to the desired shape of the liner.

23. The method according to claim 21, wherein the forming step includes compressing the first region to a first thickness and the second region to a second thickness, wherein the first thickness is less than said second thickness and said first region serves to structurally enhance said liner.

24. The method according to claim 21, wherein the liner is a headliner for use in the passenger compartment of an automobile, and the forming step includes forming said regions such that a lofted region is created in a portion of the liner that will overly the driver's seat in the vehicle.

25. The method according to claim 21, wherein the liner is a headliner for use in the passenger compartment of an automobile, and the forming step includes forming at least one of said regions such that a taper is created in a region of the base portion.

26. The method according to claim 21, wherein the base portion is contoured during manufacturing for use as a headliner in the passenger compartment of an automobile, and further including the step of attaching a separate component to the perimeter of the base portion to absorb at least a portion of impact energy during a collision.

27. A headliner comprising:

a base portion fabricated of a composite material comprised of a plurality of mineral fibers and a plurality of organic fibers, said base portion including a lofted perimeter region that is capable of absorbing a portion of impact energy created during a collision.

28. The headliner according to claim 27, where said lofted perimeter

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region is defined by a separate component coupled to an edge of a main body of the base portion.

29. The headliner according to claim 27, wherein the separate component is attached to the base portion main body using an adhesive.

30. The headliner according to claim 27, wherein the lofted perimeter region is integral with an edge of a main body of the base portion.